

## THE MEDICALIZATION OF AYAHUASCA AS A DEPRESSION TREATMENT

Cultural Reductivism and Biopiracy Concerns

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**Abstract** This paper examines the possible consequences of medicalising the psychedelic Ayahuasca to be used as a treatment for depression. Through a science and technology studies (STS) understanding of the social construction of scientific facts, I consider how traditional indigenous uses of Ayahuasca are translated into Western medicine. Two special points of attention are: (1) the cultural reductivism entailed in the standardisation of the active substance of Ayahuasca (DMT), understood through Martin's (2000) analysis of neuroreductivism in Western medicine, and (2) the issue of biopiracy, wherein biological resources are appropriated without fair compensation for indigenous communities. In conclusion, I suggest that the dangers of medicalising ayahuasca boil down to an unjustified hierarchy of scientific knowledge over indigenous knowledge systems, which might lead to serious consequences also for the effectiveness of the proposed treatment.

**Keywords:** *Medicalization, Ayahuasca, Neuroreductivism, Biopiracy*

## I Introduction

The already high number of cases of depression and anxiety worldwide have been further exacerbated due to the effects of the Covid-19 pandemic, especially among young people (Davis, 2021). In light of this public mental-health crisis, scientists and researchers are exploring innovative treatments for depression (used here as an umbrella term, in medical discourse referred to as major depressive disorder MDD), including the possibility of using psychedelics as therapeutics. The resurged interest in psychedelic research, also referred to as the ‘psychedelic renaissance,’ comes after a condemnatory period against various hallucinogenic substances that were associated with the countercultural movement in the 60s, most notably in the U.S (Fotiou, 2020). Against this backdrop and considering that many psychedelics have a long history of traditional indigenous uses, it is not surprising that differing cultural valuations and claims regarding psychedelics pose serious challenges to the effective translation of these drugs into medical treatments.

Amongst the most novel (clinical) proposals is the potential for *ayahuasca*, a centuries-old indigenous brew, to be used as a potential treatment for depression (Frood, 2015; Osório et al., 2015; Soler et al., 2016). Ayahuasca is prepared with a mixture of the vines of the *Banisteriopsis caapi* plant and leaves from either *Psychotria viridis* or *Diplopterys cabrerana*. Variations of the brew have been used by traditional communities in the Amazon region for hundreds of years and continue to be used to this day (Soler et al., 2016). Scientists are particularly interested in the potential of the substance N,N-Dimethyltryptamine (DMT), found in the latter two shrub leaves, which has an agonistic effect on serotonin receptors in the brain and increases neuroplasticity, as well as being the psychoactive substance that induces the dream-like visions ayahuasca is most popularly associated with (Soler et al., 2016). In turn, the  $\beta$ -carboline alkaloids such as harmine and harmaline contained in the former vine, *Banisteriopsis caapi*, are monoamine oxidase (MAO) inhibitors and therefore prevent the degradation of DMT thus allowing its hallucinogenic effects to take place. Thus, when ingested orally, DMT by itself does not induce hallucinogenic effects and therefore its use as an isolated substance in clinical trials happens intravenously.

Initial studies based on users’ self-report and healthy participants ingesting ayahuasca have shown promising results of increased mindfulness and well-being even after a single ayahuasca experience, although a full understanding of ayahuasca’s working mechanisms and therapeutic potential has not been agreed upon (Maia et al., 2023). Two open-label clinical trials in Brazil with small samples (n6 and n17, respectively) of individuals with treatment-resistant MDD have also reported a decrease in depressive symptoms based on standardised diagnostic

questionnaires (Osório et al., 2015; Sanches et al., 2016). This was followed up by a similar study including a placebo group, which reinforced the safety and therapeutic potential of ayahuasca as a depression treatment (Palhano-Fontes et al., 2019). More recently, a London-based company, Small Pharma, completed the second phase of their clinical trial investigating the effects of intravenous DMT on MDD, also reporting positive results; the company will follow up with a study comparing the use of DMT to traditional selective serotonin reuptake inhibitors (SSRIs) and examining their interaction (Cowling, 2023). From a Science and Technology Studies (STS) perspective, it is extremely important to assess the cultural context within which these new treatments are being developed, especially given that it draws from traditional indigenous knowledge systems (Erickson, 2015).

As such, this paper explores the consequences of the medicalisation of ayahuasca in terms of how it might lead to a culturally reductive type of therapeutics, that not only risks undermining a rich cultural heritage and denying profits to the original users of the brew, but might also hinder the positive effects associated with its usage. To this end, I am guided by the following research question:

*“How does the process of inscription of ayahuasca (and specifically one of its active substances DMT) as a manufactured drug for the treatment of depression bring about issues of cultural reductivism and biopiracy?”*

I begin by first giving some background on ayahuasca and its process of medicalisation in the context of the social construction of scientific facts. Next, I compare how traditional communities conceptualise the cultural dimensions of ayahuasca as opposed to how Western medicine seems to understand it. In this section, I focus particularly on what the neuroreductive framework in contemporary neuroscience (Martin, 2000) means for the medicalisation of ayahuasca, as well as the distinction between nature and culture. Finally, issues of biopiracy that encompass patent battles are considered. I conclude by drawing attention to the root of these challenges, namely, the scientism ideology that undermines indigenous epistemologies (Erickson, 2015).

## **2 The Medicalisation of Ayahuasca**

The concept of medicalisation refers to the process in which a variety of human problems are treated as medical issues, which leads to a linear process of studying the problem, developing guidelines for its diagnosis and treatment, as well as establishing preventive measures against it (Noorani, 2020). Mental-health

issues, most notably depression, are treated through different types of medications that constitute a huge and profitable drug market. The profit-oriented treatment of mental health has been criticised by many who see the source of mental disorders as stemming largely from alienating social structures, and not solely because of chemical imbalances in the brain. Nevertheless, the prevalent Western medical narrative remains focused on chemical imbalances, which is exemplified in the over-prescription of antidepressants, whose effectiveness and side effects are being increasingly challenged (Dowrick & Frances, 2013). In this sense, critics identify that better welfare state policies to ensure social cohesion and equality of opportunities play a much more important role in the prevention of mental health issues than usually acknowledged. While different branches of medicine do show different understandings of depression and its possible treatments, the medical neuroscientific understandings relating to chemical imbalance prevail in the treatment of MDD.

What is important to understand is that, specifically in the context of ayahuasca, the process of medicalisation entails a standardising practice wherein the use of the brew is decontextualised from its original cultural setting and transformed into a neutralised and controlled substance (Noorani, 2020). This happens both in the use of the ayahuasca brew in clinical settings as well as in the isolation of the active substance DMT. Still, in Western society, psychedelic-based treatments are likely to become more legitimised and trusted under the banner of science, since scientific facts are highly regarded as the most valid and objective type of knowledge, an ideology that is often referred to as scientism (Erickson, 2015). From a cultural perspective, given the pervasiveness of scientism in Western society, it is understandable that the public will trust the scientific community to establish safety standards and produce evidence that a new drug is effective. But the process of standardising and legitimising a new treatment involves much more than straightforward scientific experiments (Sismondo, 2010). While science is legitimised through rigorous scientific method, the actual practice of research involves laborious standardising of boundary objects that are manipulated differently in different social settings.

Acknowledging the messy and socially contingent process of scientific discovery demystifies the objective view of the scientific method, meaning that it opens the space to see different types of knowledge as legitimate. Indeed, as pointed out by Erickson (2015), other sources of knowledge, such as indigenous knowledge systems, can be as valid as scientific knowledge, since they often entail as much rigour, depth of understanding and complexity as that equated to science. Likewise, Fotiou (2020) emphasises the importance of recognising the role of indigenous knowledge that embodies a different ontology when engaging in psychedelic research.

The process of making use of traditional indigenous knowledge as a basis of research for the development of novel treatments falls under the field of ethnopharmacology (Khamkar et al., 2015). Ethnopharmacology is a method for ‘discovering’ novel drugs through anecdotal references to the effects of particular plants amongst traditional communities. From an STS perspective, this discipline is interesting since it purposefully draws on lay cultural understandings as a basis for scientific knowledge (Sheldrake, 2020). Worryingly, it has been pointed out repeatedly that the ethnographic component that is essential to this type of ethnopharmacological research is often downplayed (Soejarto, 2005). Additionally, when the ethnographic component is included, cultural biases might hinder a true appreciation for traditional practices, considering the scientism ideology that was already explained.

Furthermore, some types of knowledge depend on an enculturation transfer mode, meaning that these cannot be effectively conveyed through formal modes of understanding, but entail practical and tacit knowledge (Sismondo, 2010). A clear example of this issue is described by Sheldrake (2020), wherein the ethnobotanist Schultes had difficulties in identifying and categorising the different strains of the ayahuasca vine during his long study in the Amazon region. On the other hand, Schultes was surprised by the ability of locals and ritual leaders to easily identify the different strains of the plants. This exemplifies the depth of understanding of indigenous knowledge, which, while not relying on the same ‘scientific’ methodology of Western knowledge, is often as complex and rigorous.

An understanding of the social construction of scientific facts in practice helps convey the possible consequences of the medicalisation of ayahuasca. According to Vinck (2010), there is a process of inversion of nature within scientific research. This means that natural objects are first dissociated from nature and standardised for experimenting in the laboratory. After the manipulation of these inscriptions, at the point in which researchers conclude from their experiments, the inscribed object suffers an inversion process and is no longer conveyed as a representation, but rather as a natural occurrence. In other words, the context of discovery disappears and the fact that is established comes to be seen as obvious in nature. In the case of ayahuasca, this can be seen clearly in studies that focus on neuroimaging to identify how the active substances of the brew affect the different areas of the central nervous system. The process of identifying areas of the brain involves formal knowledge and the use of instruments for image processing that follow direct steps. Scientists are trained to be looking at specific things, but by doing so they might miss other connections or the relationship between what they observe and other effects, particularly concerning the holistic ayahuasca experience. Notably, in the reports of clinical studies, the explanation of chem-

ical mechanisms and the use of standardised diagnostic questionnaires prevail over discussions on the more subjective aspect of participants' experiences.

More integrative branches of ethnopharmacology, still coming from a psychotherapeutic context instead of a religious or shamanic one, involve contextual information about the nuances and personal experiences with ayahuasca. In other words, the knowledge about the subjectivity of ayahuasca users is integrated into scientific and neurological explanations. According to researchers, this can help inform the ethics of researching and establishing psychedelic-based treatments. While this might be true, the enculturational mode of knowledge transfer discussed above might also pose challenges to this methodology. To reiterate, one must never lose sight of the manipulation and tacit knowledge entailed in the inscription of a new object into the world of science, since this is not a straightforward process, but a messy one (Vinck, 2010).

By understanding that scientific facts are socially constructed, one acknowledges that the cultural context of researchers comes to influence the outcome of their research. As such, the next section will examine the cultural implications of the medicalisation of ayahuasca, as I argue that the neuroreductive understanding of individuals prevalent in the neuroscience discourse is not compatible with the holistic character of traditional ayahuasca use.

### **3 Consequences of Ayahuasca Medicalisation**

#### **3.1 Cultural Reductivism**

The meaning of ayahuasca is different for different social groups (Sáez, 2014). In traditional settings, Ayahuasca works by setting intentions: the experience is conceptualised as a holistic process but is also recognised as being a hard process that entails commitment and a disposition for learning. By turning it into a Western medicine, the process might be essentialised and not work as effectively as it does in its traditional form. Crucially, Western medicine takes a very individualistic approach to healing, while traditionally, the benefits of ayahuasca are largely attributed to the setting in which it is ingested and the intentions that are set for the ceremony (Rodd, 2018).

Many ayahuasca users emphasise that a crucial part of their experience refers to the connections and conversations that they had with fellow ritual participants. This is because part of the healing power of ayahuasca is not caused by the ingestion of the brew itself, but rather the entire experience. As evidenced by Noorani (2020) participants need to 'integrate' the insights from their experience into their life after the experience with ayahuasca. This might be one of the most impor-

tant aspects of the treatment since it relates specifically to putting the ‘teachings’ of ayahuasca into practice. In shamanic rituals, such community aspect is emphasised, and often in retreats there are extensive discussion rounds amongst the participants, which they mention as being one of the most integral parts of the healing process (Gavin Hoffman, 2020). Likewise, the work of the shaman in setting the intentions for the experience is extremely important and might impact the outcome of the consumption of ayahuasca. The experience of the shamans is also crucial for determining the right dose of the substance and the frequency a ‘treatment’ should last, since it is commonly acknowledged that to reap the full benefits of ayahuasca derive from more than one experience (Hoffman, 2020).

In contrast to traditional ayahuasca use, in its inscription as a medicine, as evident in the recent clinical trials, the substance is not always admitted orally, but participants receive a specific dosage of the purified active substance, DMT (Cowling, 2023; D’Souza et al., 2022). Importantly, the intravenous administration of DMT leads to a considerably shorter experience (20-30 minutes), given the absence of MAO inhibitors contained in the vine (D’Souza et al., 2022). Further, the purging effects of the vine, which often induces vomiting and diarrhoea, disappear. For indigenous communities, this aspect of ayahuasca is important for the whole experience, since it is seen as a purifying ceremony, where one can release oneself from past traumas and by doing so live a more fulfilled life. By stripping away this component from the experience, modern science relies much more on the chemical effects of the DMT hallucinogen, potentially stripping away part of the bodily experience that is so emphasised in traditional ayahuasca consumption. Additionally, while most studies focus on DMT’s acting mechanism as an antidepressant, recent research has shown that the  $\beta$ -carbolines contained in the vine might also be important in the neural mechanisms associated with ayahuasca intake (beyond ensuring that DMT is not degraded) (Morales-García et al., 2017; Osório et al., 2011). This means that these positive effects are lost when DMT is administered by itself.

Here, Martin’s (2000) discussion on the reductionism of human behaviour into neural connections and chemical reactions in the brain becomes relevant. According to her, western medicine conveys a reductive view of the mind and the body, conceptualising everything in terms of a series of connections in the brain. Such a rise of a neuroreductivist view of human beings is also embedded in a larger historical context of dichotomies and classifications, such as that between nature/culture and male/female. This framework of neuro-connections as the explanation for everything strips away the social context from individual experiences. This is problematic for the effective use of ayahuasca since the drug was traditionally used in religious rituals that involve a holistic and subjective view of the

world, and specifically the connection between one's mind and body. Ironically, ayahuasca might have been used to change one's metaphysical conceptions of life (Timmermann et al., 2021), meaning that the reductivist view of a body and mind division is challenged through the experiences brought about by the brew.

A lexical examination of the term 'ayahuasca' is also fruitful in understanding how the urban/medical practices in comparison to indigenous ones value the brew (Sáez, 2014). The name is derived from the vines, but what is usually emphasised in the urban use of ayahuasca are the visions it provides. However, the substance that induces the vision is not the vine, but rather the leaves of two types of shrubs that contain DMT. Still, the popular name ayahuasca derives from the vine *precisely* because indigenous communities see its effects such as vomiting as one of the essential aspects of the drug intake, since this denotes a process of cleansing, or purging, that will lead the way to a new outlook on life.

Relatedly, indigenous traditions do not perceive ayahuasca as merely an object, but rather as an actor with whom they are engaged (Sáez, 2014). In some traditions, ayahuasca is conceptualised as a female energy and is commonly referred to as a 'plant teacher', from whom the individual having the experience must learn. Indeed, Goldstein's (2021) study of phytocommunication practices in relation to ayahuasca and the plant *Arabidopsis*, a commonly used plant in lab studies, portrays how these different groups relate to the plants they are 'working' with. While indigenous communities see ayahuasca as an entity, collaborator, and facilitator for the accumulation of knowledge, modern science treats plants as mere objects of inquiry. Her analysis also illuminates the nature/culture dichotomy, since in indigenous ontologies, nature and an ecologically minded existence are an integral part of the world, and indeed culture. There is no separation between these realms, unlike in the practice of modern science.

Perhaps even more concerning is the rush to roll out and establish new treatments using psychedelic therapeutics, largely caused by market value considerations and competitiveness in academic research. Such a rush could result in potentially harmful products (Noorani, 2020). In particular, due to budget constraints, appropriate clinical trials that reproduce a community-based treatment as the 'integration' of ayahuasca experiences are rare. While sometimes the administration of Ayahuasca or DMT is accompanied by psychotherapy, this remains a more individualistic approach and is often short-lived as most studies only follow up on participants for up to 6 months after administration. Still, the preliminary results of the trials mentioned in the introduction show promise in the potential of ayahuasca and DMT as a treatment for depression that is faster and has fewer side effects than the continuous use of medication such as SSRIs. In light of the above, however, the challenge now is to find ways to integrate



and put indigenous forms of knowledges in conversation with Western medical knowledge at a deeper level. Recognising different ways of relating to the world can be fruitful not only in the case of psychedelic use for mental health, but also for other topics where indigenous knowledges could add on to Western scientific practices, for example, in tackling the environmental crisis. This leads to the next section, which explores the issue of biopiracy/bicolonialism in the context of the medicalisation of ayahuasca.

### **3.2 The Issue of Biopiracy**

Having considered the cultural disparity between traditional and medicalised ayahuasca use, and the possible implications of this for the efficacy of the treatment being suggested, I now turn to the issue of biopiracy and the need to recognise traditional knowledge as the source of novel treatments. As described by Kleinman (2003), biocolonialism is the practice through which Western scientists appropriate natural resources and traditional biological processes to be incorporated into their own work without recognising their origins. The damages of this practice are intertwined with laws for patenting living organisms (Fecteau, 2001). Patents are granted according to the innovative character of a new substance, as well as its perceived non-obviousness and usefulness. The new 'invention' must meet all criteria to be patentable.

Despite the non-novelty of many biological resources that have been used, companies can hold up their cases in court, given the added value of scientific knowledge upon traditional ways of knowing. In the case of ayahuasca, a famous example is the patenting of an ayahuasca vine species by Loren Miller in 1974 (Fecteau, 2001). He took samples of local vines in Ecuador and then proceeded to stabilise them and was granted a patent. Upon finding out about the patent, the indigenous community demanded compensation, and yet the patent took decades to finally be reversed. Even if patent claims can be disputed legally by interested parties, the process is very costly and therefore likely to be unavailable for original 'owners' of the knowledge being patented.

Another issue related to the patenting and inscription of ayahuasca into Western medicine relates to the legal status of psychedelic substances. Through the development of safety standards for the usage of psychedelic substances that become institutionalised, recreational or religious uses of psychedelics might be hindered. By not complying with standards, uses of ayahuasca outside a medical context like those used in religious ceremonies like the Santo Daime in Brazil could become criminalised. As research interest in psychedelics in the West increase, careful attention must be paid in order not to undermine the sovereignty and economic benefits of indigenous populations.

## 4 Conclusion

While recent clinical trials to assess the value of ayahuasca and DMT as a depression treatment have shown promising results (Cowling, 2023; Palhano-Fontes et al., 2022), the medicalisation of this type of psychedelic substance risks reducing its effectiveness through a process of cultural reductivism entailed in the inscription of the drug in the scientific medium. Specifically, the holistic and social character of traditional ayahuasca rituals is replaced by a neutralised drug (either ayahuasca itself or DMT) in a controlled environment. Furthermore, the medicalisation of Ayahuasca poses risks to the cultural heritage and sovereignty of indigenous communities that have used the brew for centuries as a part of their religious and cultural traditions. Through the process of bio-piracy, Western researchers are able to apply for patents on therapies that are derived from indigenous knowledge systems without granting them any intellectual rights, thus undermining their sovereignty and knowledge (Kleimann, 2003).

More ethnographically committed research in the field of ethnopharmacology, as well as serious collaborations between scientific actors and traditional communities, to ensure that the knowledge derived from these communities is duly recognised and recompensated, seems to be the best way forward for the use of psychedelic-assisted therapy (Fotiou, 2020). But even so, the cultural and epistemological disparities between these knowledge systems, especially in terms of their view of the position of the individual within the environment/society, pose risks for the effective use of ayahuasca as a treatment for depression. If approached carefully, however, the use of psychedelics as a mental health treatment could instead open scientific practices to new epistemological and ontological ways of relating to the world around. The issue then, in my view, boils down to the higher standing of scientific knowledge over traditional forms of knowledge in Western culture, a hierarchy that is not justified.

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